Adv.

Vaccination
against
SMALLPOX

LEDERLE ANTITOXIN LABORATORIES
511 FIFTH AVENUE
CORNER OF FORTY-THIRD STREET
NEW YORK CITY

Vaccination
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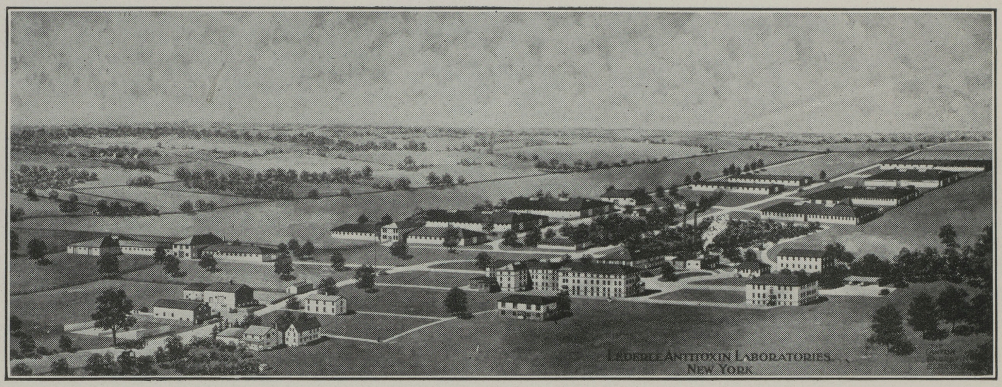
SMALLPOX



View of Farm and Laboratories in Pearl River, Rockland County, New York where Vaccine Virus Lederle is Produced

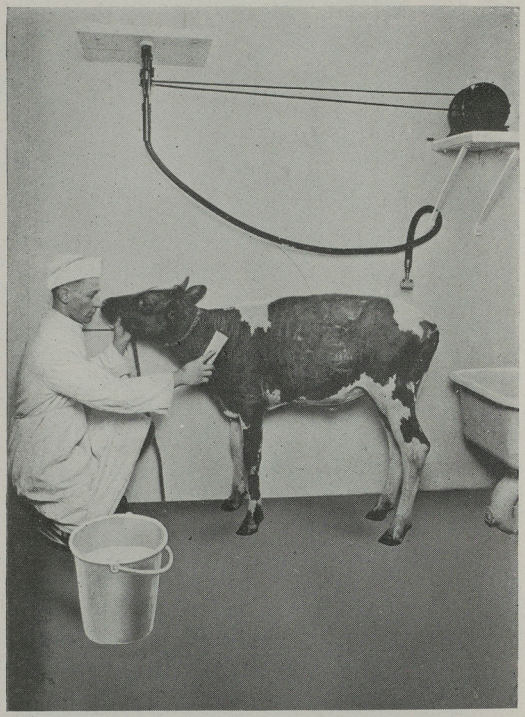
Vaccination Is 2,000 Years Old

DR. G. W. MCCOY, director of the Hygienic Laboratory of the U. S. Public Health Service, says:

"Vaccination is an outgrowth of man's effort to protect himself from pestilence by using nature's methods of defense."

"Primitive man noticed that recovery from a first attack of most diseases gave immunity against other attacks; and some 2,000 years ago he began to inoculate his fellows with smallpox when conditions seemed propitious instead of waiting for nature to do it at some time when conditions might be very unpropitious.

"Before the days of vaccination, conservative estimates show that one-third of all persons had smallpox and one-tenth of all deaths were due to it. Today smallpox is rare; many physicians have never seen a case; and where vaccination is consistently practiced no deaths from smallpox occur. Formerly smallpox was considered a children's disease; and it still is a child's disease—where infantile and school vaccination is neglected. Witness the Philippines, where four or five years ago, after years of neglect of vaccination, an epidemic swept away nearly 50,000 persons, a large percentage of whom were children under ten years of age."



PREPARATION ROOM

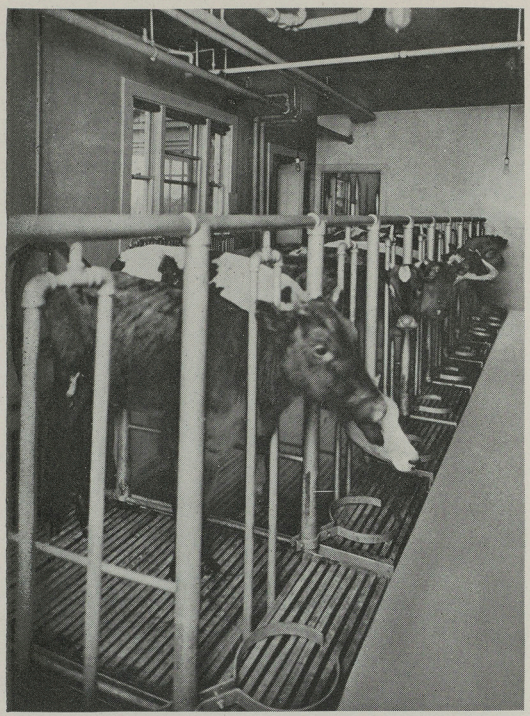
Heifer calves approximately six months to a year old are first clipped and scrubbed.

Increasing Virulence of Smallpox

"Reports from twenty-four states, and from 190 cities, including all the larger ones, show that the smallpox prevailing during the first six months of this year was of far more virulent type than that prevailing during the period of 1921. The number of cases was 72 per cent less this year in twenty-four states combined, and 74 per cent less in 190 cities. In these cities, however, the number of deaths during the first six months of 1922 was nearly four times the number reported in the same period of 1921." (*Journal A. M. A., October* 14, 1922.)

In the United States, well-vaccinated communities show low smallpox rates. Poorly-vaccinated States tell another story; Oregon with 1.45 per thousand population, Washington with 1.72 and Kansas with 2.0 per thousand population.

Some communities wait till an epidemic breaks out and then rush to vaccinate. This stops the disease—after it has caused many deaths and has "branded" many survivors. In Kansas City in November 1921 an epidemic of smallpox began, yielding 350 cases and 123 deaths; and a few months later, another started in Denver and yielded 950 cases and 288 deaths.



QUARANTINE STABLE

Calves are kept under veterinary supervision for a week. They are examined for their general condition and tested to prove their freedom from tuberculosis.

Calves in the vaccine laboratory are continuously policed to prevent their becoming soiled.

All food for these calves is steam sterilized to prevent carrying dust laden with pathogenic organisms into the vaccine laboratory.

Such epidemics always end the opposition to vaccination in the community—for a time.

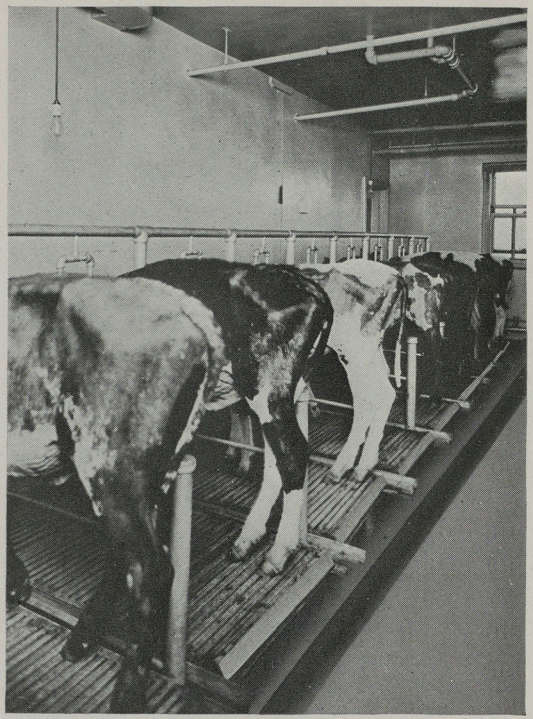
Smallpox Can Be Stamped Out

Thorough and systematic vaccination will eliminate the scourge of smallpox from every locality. With an estimate that ten million persons in this country are unvaccinated and that sufficient foci are present to maintain smallpox infection, it may be expected that epidemics will appear as long as the public overlooks the advantages of preventive vaccination.

The Public Health Service recommends vaccination in infancy, again at school age, in early adult life and whenever smallpox threatens to become epidemic. Successful revaccination is just as important as a successful first vaccination.

The Public Health Service in "Keep Well Series No. 7" has the following:

> "Is vaccination dangerous? No! When properly cared for no more dangerous than any pin scratch on the skin. Within the last two years alone over 3,000,000 persons have been vaccinated in this country without a single death."



STABLE FOR PROPAGATION OF VACCINE VIRUS

Vaccine virus is propagated on the skin of calves. An area covering the calves abdomen is shaved and scarified with lineal scarifications. The vaccinated areas on the calves' abdomens are easily seen. The calves nearest the observer show a development of five days' duration, at which time the vaccine is ready to harvest.

Note that the calves stand on elevated platforms that facilitates keeping them strictly clean.

The Vaccination Wound

The original vaccination wound should be made as small as possible to guard against infection. Years of experience have proved that the correct way to make a vaccination against smallpox is by using a steel needle point, and the most approved location is the upper arm in the region of the depression formed by the insertion of the deltoid muscle.

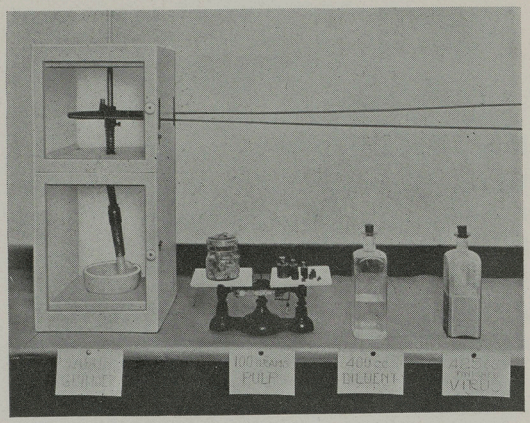
The United States Public Health Service recommends the multiple puncture method as one of three methods calculated to secure best results.

> "A sterile needle is held nearly parallel with the skin and the point pressed through the drop of virus so as to make about six oblique scratches or small punctures, through the epidermis to the cutis, but not deep enough to draw blood. The puncture should be confined to an area not more than one-eighth inch in diameter." (*Public Health Reports, Nov.* 30, 1917.)

Advantages of Puncture Method

1. Surest safeguard against infection—there is no open wound.

2. Leaves practically no scar—hence



GRINDING THE VACCINE PULP

The softened cutaneous tissue at the base of the vaccine lesions supplies the virus. This softened cutaneous tissue containing the virus is commonly referred to as the "green pulp". The tissue containing the virus is removed by a spoon curette and placed in a sterile glass jar.

The pulp is ground in diluent consisting of 50% glycerin and 50% distilled water. The grinding chamber and apparatus can all be sterilized and closed to prevent dust contamination during the period of grinding, which may require from eight to fourteen hours to produce a uniformly suspended virus.

The virus suspension is then stored at room temperature for two weeks, during which time the bacterial content of the virus is largely destroyed by the action of the glycerin but the viability of the glycerin on the ground pulp at room temperature is referred to as "curing". The virus is then stored in an icebox below the freezing point of water and tested for its purity and viability.

has an added advantage when vaccinating girls.

3. Virus may be wiped off immediately after vaccination—no waiting for wound to dry before clothing touches it, for there is no open wound.

4. Safest procedure in vaccinating infants and small children.

5. In private practise this method insures greatest freedom from sore arms.

Heat Destroys the Virus

The following is taken from the instructions issued by the Florida State Board of Health:

> "Vaccine should be kept on ice until used. Vaccine not kept at a low temperature soon becomes inert and will not 'take'. Vaccine kept at 98° F. three to four days was dead. (This is body temperature and about the temperature at which the vaccine would be kept if carried in the pocket.) Vaccine kept at 70° F. one to three weeks was weakened but not dead.
>
> "Vaccine kept at 50° F. three to seven months was still active. (This is about refrigerator temperature.)
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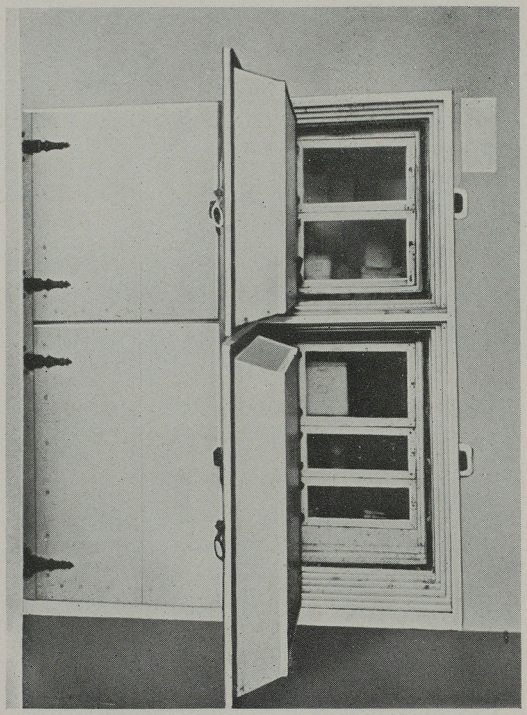
> "Vaccine kept at 10° F. four years was still active."



FREEZING COLD STORAGE

By means of this well insulated chest the vaccine virus is stored at a temperature always below freezing.

Necessity for Keeping Vaccine on Ice

"The expiration date on a package of vaccine virus indicates its expectancy of potency under favorable conditions. Vaccine virus cannot be kept too cold; it deteriorates rapidly even at room temperature. The freshest possible vaccine should be obtained; and this can be done by arranging for small and frequent shipments. The packages should be kept in water-tight containers in constant contact with ice. Large quantities may be placed in metal boxes, small quantities in fruit jars. For use in the field, large quantities should be transported in ice-cream freezers, small quantities in rubber-stoppered test tubes, packed with shaved ice in the inner compartments of vacuum bottles." (*Public Health Reports, August* 19, 1921.)

Vaccine Virus Lederle

Is prepared under license of, and in strict compliance with, the regulations of the United States Public Health Service. Before being marketed, the vaccine is thoroughly tested to determine its freedom from harmful bacteria, and also its ability to produce typical vaccinations. The accompanying photographs show the

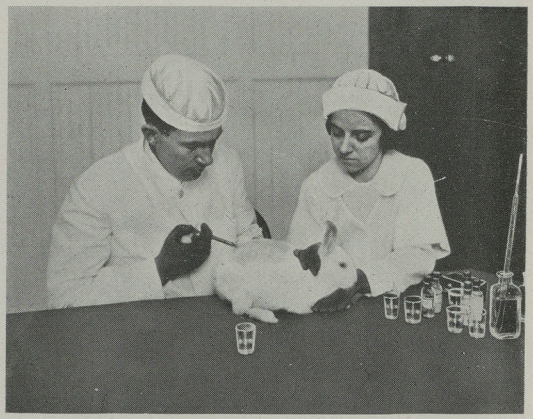
BACTERIOLOGICAL TESTS

To prove the purity of vaccine virus, plates are poured from various dilutions of the vaccine virus to test the efficiency of the curing process.

Fermentation tests in special broth media are also made to determine its freedom of pathogenic bacteria.

ANIMAL TESTS FOR SAFETY OF THE PRODUCT

Inoculation of material from the vaccine virus into white mice and guinea pigs to ascertain that the product is free from pathogenic organisms.



POTENCY TESTING

The following dilutions of the glycerinated vaccine virus are made: 1 – 1,000; 1 – 10,000; 1 – 100,000; 1 – 500,000; 1 – 1,000,000. Intracutaneous injections of each dilution are made in the marked areas on the shaved back of a rabbit. A fully potent virus will ordinarily give a typical "take" in a dilution of 1 – 500,000.

essential steps in the production of the vaccine.

The expiration date stamped on the package is a reliable guide for judging the activity of the vaccine *only when it is continuously kept on ice.* During the summer months, special attention must be given to the storage and shipping of Vaccine Virus; for if its vitality has at any time been weakened by improper storage or handling, subsequent storage on ice will not restore the usefulness of the product.

Vaccine Virus Lederle

(Supplied in Glass Capillary Tubes)

Each capillary tube of virus is accompanied by a sterile needle with which to properly and conveniently make the scarification.

VINE	10 vaccinations.
VASE	5 vaccinations.
VENT	1 vaccinations.

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